Iron Overload and Necessary of Its Chelating
CBC13thP325T1

Khoshlahni N. [1, 2], **Mirzapoor T.** [1], **Sagha M.** [2], **Mohammadzadeh-Vardin M.**[2*]

1- Department of Biology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, Iran
2- Research Laboratory for Embryology and Stem Cells, Department of Anatomical Sciences and Pathology, School of Medicine, Ardabil University of Medical Sciences, Ardabil, Iran

** Corresponding Author:*
Dr. Mohammad Mohammadzadeh-Vardin
Department of Anatomical Sciences and Pathology, School of Medicine, Ardabil University of Medical Sciences, University Street, Ardabil, Ardabil province, Iran
Telefax: ++98 45 33513776
E.mail: m.mohammadzadeh@arums.ac.ir

Introduction: Iron overload is a serious clinical condition. It occurs in transfusion-dependent patients who have β-thalassemia or use iron supplements. Chronic intoxication by iron supplement should be avoided especially in children and pregnant mothers. Iron depletion from body is very limited and cannot go out of body easily. **Literature review:** Iron generates highly reactive oxygen and hydroxyl free radicals through Fenton´s reaction from cell-derived hydrogen peroxide and other constituents of the cell. These radicals can damage any issue in the body. The most vulnerable organs for iron generated free radicals are the immune system, central nervous, cardiac, hepatic, pulmonary, renal and hematopoietic systems. Iron accumulation in brain can cause Alzheimer disease that can be detected by MRI. Iron generated free radicals in hematopoietic tissue can cause any kind of leukemia by damaging genetic materials or chromosomes numerically or structurally. For all these reasons iron overload should be eliminated seriously especially among children. Excess iron should be removed from the body either by iron chelating agent Deferoxamine (DFO) or bloodletting. DFO is one of the nature siderphore groups with hexadentate structure that are secreted as a growth promoting agent by the microorganisms like *Streptomyces pilosus*. It is a tris-hydroxamic acid derivative and chelates ferric iron in 1:1 molar ratio. **Conclusion:** Iron overload is a dangerous medical condition and it should be avoided by any available means. DOF is used for depleting iron from the body, but there may be needed to invent some other chelating agents with more advantages.

Key Words: Iron Overload**,** Free Radicals, Deferoxamine.